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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,929	08/31/2005	Geoffrey Canright	OSL-023	3667

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EXAMINER	
PARK, JEONG S	

ART UNIT	PAPER NUMBER
2154	

MAIL DATE	DELIVERY MODE
08/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,929	CANRIGHT, GEOFFREY	
	Examiner	Art Unit	
	Jeong S. Park	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/22/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1-10, 16, 20 and 22 are objected to because of the following informalities:

In claim 1, line 11, the phrase "a destination node" should be corrected as –the destination node-- for clear understanding of the claim;

In claim 5, line 5, the word "neighbours" should be corrected as –neighbors--;

In claim 6, line 4, the phrase "detection of the" should be corrected as –detection-- for clear understanding of the claim; and

In claim 8, line 5, the phrase "(RQD (D, j, and RQD (D, S))" should be corrected as –(RQD (D, j) and RQD (D, S))"-- for clear understanding of the claim. Similar correction should be made for claim 20.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toh (U.S. Patent No. 5,987,011), in view of Basso et al. (hereinafter Basso)(U.S. Patent No. 6,721,800 B1).

Regarding claims 1, 11, 12 and 15, Toh teaches as follows:

a method for routing messages from a source node (source mobile host) to a destination node (destination mobile host) in a dynamic network (ad-hoc mobile communications network)(see, e.g., col. 3, lines 38-44), said source node including a routing table (associativity table), each row in the routing table representing a possible destination node for a data message transmitted from the source node, and each row in the routing table (associativity table) including one probability value for each neighbor node of the source node (stability of communications links between neighboring mobile host)(see, e.g., col. 3, lines 38-64), the method comprising:

updating the probability values (interpreted as a stability of communications links) with quality measurements taken each time a message (identifier beacons (ticks)) is sent from the source node to a destination node (see, e.g., col. 3, lines 31-37).

Toh does not teach percentage routing method.

Basso teaches as follows:

probability value for each neighbor node of the source node (see, e.g., col. 3, lines 34-36);

routing a predefined percentage (72 in figure 2) of the messages by choosing the neighbor node (next hop0 60a in figure 2) with the highest probability value (action data 70 in figure 2) in the row for a destination node (subnet destination address 52 in figure 2) in the routing table (ECMP forwarding table) in figure 2)(see, e.g., col. 3, lines 21-48); and

routing the other messages by distributing the messages among the neighbor

nodes (next hop1 60b and next hop2 60c in figure 2) according to the probability values given in the same row in the routing table (see, e.g., col. 3, lines 21-48).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Toh to include percentage routing among multiple next nodes using a probability value for each neighboring links as taught by Basso in order to increase the reliability and efficiency of the route selecting process in a ad-hoc mobile communications.

Regarding claims 2 and 13, Toh teaches as follows:

the probability values (stability of communications links between neighboring mobile host) are updated in terms with the previous probability values and the measured quality of the link (number of ticks)(the stability of links is shown as the number of ticks which are accumulated in time for each link connected, see, e.g., col. 3, lines 31-37).

Toh does not teach the sum of all the probability values in each row to one

Basso teaches as follows:

probability value for each neighbor node of the source node (see, e.g., col. 3, lines 34-36); and

the cumulative percentage in the action data (72 in figure 2) ends with 100% for the last next hop which means all the traffic will be distributed among selected next hops (see, e.g., col. 3, line 66 to col. 4, line 7).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Toh to include the sum of all the probability values in each row to

one as taught by Basso in order to efficiently distribute all the traffic among selected links based the percentage assigned by the link quality.

Regarding claims 3 and 14, Toh teaches as follows:

the quality measures are represented by hops and/or time delays (the route selection is based on association stability, route relaying load, route length and cumulative forwarding delay, see, e.g., col. 10, lines 8-20).

Regarding claims 4, 5,16 and 17, Toh teaches as follows:

at the detection of a lost connection with a neighbor node (route reconstruction (RRC) phase due to movement of any mobile nodes, see, e.g., col. 11, lines 36-41), for each row of the routing table for the node, removing the probability value associated with the lost neighbor (invalid route erasure) and adjusting the probability values of the rest of the neighbors so as to sum to one (partial route discovery), and creating a new row in the routing table for the lost neighbor node (new route discovery), by initially assigning equal probability values for each of the respective remaining neighbor nodes in the new routing table row (new route discovery phase resets all the stability values), and then adjusting the probability values according to quality measurements performed by data messages emitted from the node towards the lost neighbor node (explained above regarding claim 2)(see, e.g., col. 11, line 35 to col. 12, line 26); and

adjusting probability values to re-establish the relative relations among the remaining neighbours prior to the loss of the neighbor node (new route discovery phase resets all the stability values when deleting all routing table entries, see, e.g., col. 11, line 53-57).

The detail steps or methods due to a lost connection are inherently taught in route reconstruction phase by Toh.

Regarding claims 6 and 18, Toh teaches as follows:

waiting a predefined period of time from detection until adjusting existing routing table rows and creating new routing table rows (source node waits until it receives REPLY packet from the destination node within BQ-TIMEOUT, see, e.g., col. 11, lines 36-65).

Regarding claims 7 and 19, Toh teaches as follows:

dummy messages (BQ and REPLY packets) are specially emitted after the predefined time interval (BQ-TIMEOUT), and at regular intervals thereafter, only for the purpose of finding a lost neighbor node (BQ and REPLY packets for route discovery phase, see, e.g., col. 8, lines 7-14);

BQ and REPLY packets are used for updating the routing tables (see, e.g., col. 8, lines 7-14); and

identifier beacons (ticks) update the status of its corresponding links (see, e.g., col. 6, lines 7-12).

Toh does not teach that performing the route quality measurements and updating the routing tables are simply done by the data messages themselves.

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Toh to include non-connection oriented communications between mobile nodes by piggybacking the signal packets (dummy packets) with the data

packets in order to simplify the communications method even though lots of disadvantages as known in the art.

Regarding claims 8-10 and 20-22, Toh teaches as follows:

route reconstruction phase (see, e.g., col. 11, lines 35-45); and

computing one route quality rating for each possible destination node (see, e.g., col. 3, lines 31-37).

Basso teaches as follows:

probability value for each neighbor node (possible destination node) of the source node (see, e.g., col. 3, lines 34-36).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Toh to include computing new probability value as taught by Basso in order to properly assign the probability value based on the current traffic handling quality.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeong S. Park whose telephone number is 571-270-1597. The examiner can normally be reached on Monday through Thursday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JP

August 9, 2007

NATHAN FLYNN
SUPERVISORY PATENT EXAMINER